Time:
You'll need at least four hours to make and freeze the popsicles, but Ruff promises it's worth it!

Explore:
kitchen chemistry, material properties, inquiry process (predict, document, test, reflect)

Materials:
- ☐ Recipe printout
- ☐ 4 popsicle molds (Don't have any popsicle molds? Try using paper or plastic cups, or empty yogurt containers.)
- ☐ 4 popsicle sticks (if making your own molds)
- ☐ Blender
- ☐ Spoon
- ☐ 1/3 cup watermelons, deseeded
- ☐ 1/3 cup oranges
- ☐ 1/3 cup pineapples
- ☐ 1/3 cup kiwi
- ☐ 1/3 cup blueberries

Note: To save time, you may want to pre-cut the ingredients. If you don't have a blender, use five different colored fruit juices instead.

Rainbow Popsicle

Kid Description: Grab a grown-up to make a rainbow popsicle. This recipe is pretty cool!

This recipe makes four popsicles.

The Ruff Ruffman Show

PBS KIDS

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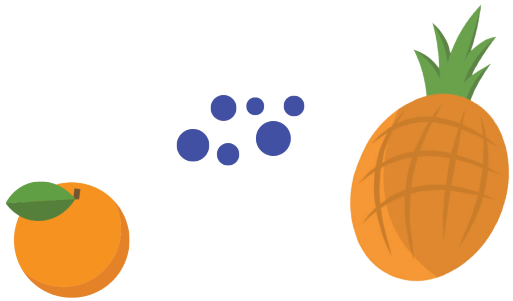
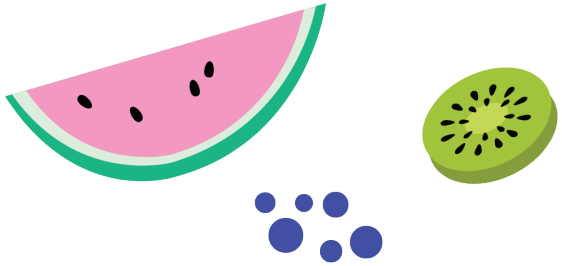
Predict

★ Brainstorm and discuss what freezing means.
- **Ask:** How do you freeze something?
- **Ask:** How do you know when something is frozen?
- **Ask:** What is a solid? What is a liquid?
- **Explain:** Solids are hard things that don't move easily. Liquids are wet and move around very easily. When ice melts, it turns into water, which is a liquid. When water freezes, it turns back into ice, which is a solid.

★ Explain what you're going to make, and how you'll make it.
- **Explain:** We're going to make rainbow popsicles today by freezing liquids. We're going to start off with five different fruits. First, we'll blend the solid fruits into liquid fruit juice. We'll freeze each fruit in its own layer in a popsicle mold. The popsicle will look like a rainbow made of five different layers of frozen fruits.



- Introduce the ingredients you'll use.
  - **Ask:** Are these fruits solids or liquids?
  - **Ask:** What will happen when we put the fruits in the blender?
- On the printout, write down the kid's predictions about how long it will take for each layer of the popsicle to freeze.
  - **Ask:** Based on our investigation of the ingredients, how long do you think it will take for each layer to freeze? I'll document your prediction by writing it on the printout.
  - **Ask:** Do you think each layer will take the same amount of time or different amounts?



Prepare

- Make sure kids wash their hands!
- Have kids follow along with the recipe on the printout. If there are multiple kids, help them take turns measuring each ingredient.
  - **Explain:** This is the recipe. A recipe tells us all of the ingredients we need and the instructions to make something. Follow along and check off each ingredient as we add it to the popsicle mold to make sure we don't miss anything!
- Kids can put the ingredients in the blender, and an adult can operate the blender. Adults should cut up all ingredients. Kids can choose whichever order they would like to combine the fruits in their popsicle mold, or they can follow the order on the recipe to create a true "rainbow" popsicle. Note: If you are using fruit juice instead of fruit, omit the blender step.
  - **Ask:** What happens to the fruit when you put it in a blender? Is it a solid or a liquid now?
  - **Ask:** What will happen to the fruit when you put it in the freezer?
- Have kids check the first layer after every 15 minutes to see how long it takes to freeze. Document the time it takes to make each layer on their recipe printout.
  - **Ask:** How long did it take for the popsicle layer to freeze? Document it on your printout.

The Recipe

(Repeat for each fruit layer)

1. Add one fruit to blender.
2. Pulse until blended.
3. Add 1-2 tablespoons of fruit to each popsicle mold.
4. Put in freezer until frozen.

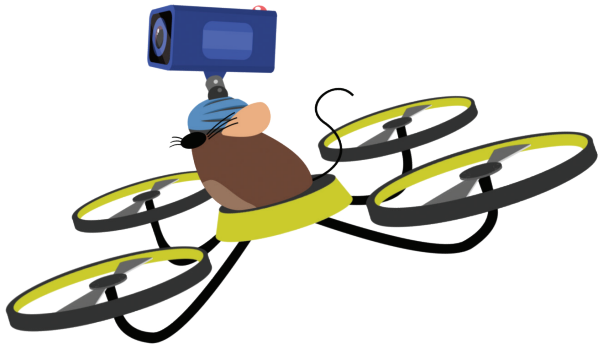
- Note: The first two layers each should take about one hour to freeze. The last three layers should each take about 40 minutes to freeze.
- If making your own popsicle molds, insert the popsicle sticks after the second layer is frozen. The sticks should be able to stand straight up.

Test

- Take the popsicles out of the freezer.
  - **Ask:** Can you see each of the ingredients now?
  - **Ask:** How does the popsicle look different from when the ingredients were first cut up?
  - **Ask:** Did each layer take the same time to freeze? Why or why not?
- Time to eat!
  - **Ask:** What does the popsicle taste like?
  - **Ask:** Which fruits can you taste?

Reflect

- **Ask:** What made the ingredients change into a popsicle?
- **Ask:** What would happen if you put the ingredients in the freezer for less time? What about more time?
- **Ask:** What would happen if you heated the ingredients?



Next:

Now try making the **chocolate mug cake recipe** to see what happens when you heat ingredients!

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Recipe

Rainbow Popsicle

Predict how long it will take for each popsicle layer to freeze.
Observe what happens and document how long it took for each layer to freeze.

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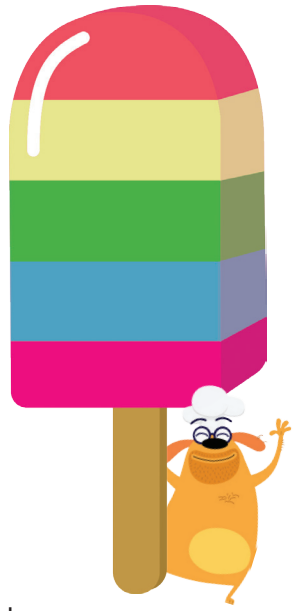
Layer	Prediction	Result
Fruit:		
Fruit:		
Fruit:		
Fruit:		
Fruit:		



Make it

Ingredients

1/3 cup watermelon
1/3 cup orange
1/3 cup pineapple
1/3 cup kiwi
1/3 cup blueberry

Recipe

Repeat for each fruit layer.

1. Add one fruit to blender.
2. Pulse until blended.
3. Add 1-2 tablespoons of fruit to each popsicle mold.
4. Put in freezer until frozen.

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